

# ZIXUAN LIANG

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## EDUCATION

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### Northeastern University

Ph.D. in Computer Engineering

GPA: 3.8

Courses: Database Management Systems, Information Retrieval, Introduction to Machine Learning and Pattern Recognition, Advanced Machine Learning, Advanced Algorithms, Web Development

May 2019 - Present

*Boston, MA*

### Zhejiang University

B.Eng. in Electronic & Information Engineering

GPA: 3.9

September 2014 - June 2018

*Hangzhou, China*

## SKILLS

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### Programming

Python, C++, Java, SQL, HTML/CSS/JavaScript

### Tools & Frameworks

MEAN Stack, TensorFlow, PyTorch, OpenCV, ROS

## WORK EXPERIENCE

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### NIO

*Software Engineer Intern*

September 2018 - February 2019

*Shanghai, China*

- Created an Android application with Android Studio to inform drivers with map and action instructions.
- Simplified the network structure and improved hyper-parameters of Yolo v3 for object detection.
- Trained the model with the images generated by deep convolutional generative adversarial networks, MNIST datasets and our own traffic data.
- Configured the relevant environment on the NVIDIA Jetson TX2 for vehicles to detect road conditions in real time.
- Our model can detect road condition includes: Pedestrians, Cars, Bikes, Traffic lights, etc. with a high accuracy(95%) and a much lower detection time consumption(20%-30% of the original model time).

### Lonza

*Data Analyst Intern*

May 2018 - July 2018

*Visp, Switzerland*

- Developed Master Data management process and maintained Master Data quality.
- Built user friendly chatbots that are online 24/7 for training new employees and handling SAP request inquiries, using deep Seq2Seq encoder-decoder model.
- Visualized Master Data with interactive dashboard and data charts to help managers make informed decisions, using tools including Microsoft Power BI and open source library d3.js.
- Improved Master Data management process efficiency by developing OCR program to process scanned documents, using novel convolutional-recurrent neural network.

## PROJECTS

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### Information Retrieval Systems

*Search Engine*

April 2020

*Northeastern University*

- Developed a Search Engine in Java with the following features: Query Expansion, Pseudo-Relevance Feedback, Snippet Generation, Synthetic spelling-error generation.
- Implemented query expansion using pseudo-relevance feedback.

- Dataset: CACM test collection.
- Created an inverted index after processing the content of the CACM corpus.
- Four baseline models for retrieval: BM25, TF-IDF, Smoothed Query Likelihood, and Lucene.
- Evaluated the performance of the different IR systems using Precision, Recall, Mean Average Precision, Mean Reciprocal Rank.
- Technologies used: Java, Apache Lucene, Maven, IntelliJ.
- Repository: [↗](#)

### **Job Portal**

*Web App*

December 2019

*Northeastern University*

- Developed a RESTful web app for allowing users to browse, save and apply to job postings, which were aggregated from Github Jobs API along with other jobs posted by recruiters.
- Technologies used: MongoDB, Express.js, AngularJS, Node.js.
- Live demo hosted on Heroku: [↗](#)

### **Movie Parties**

*Web App*

August 2019

*Northeastern University*

- Built a web app for creating and organizing casual movie parties for friends.
- Technologies used: MongoDB, Express.js, AngularJS, Node.js.
- Live demo hosted on Heroku: [↗](#)

### **Distributed Agents Operating under Uncertainty**

*Project for Air Force Research Laboratory*

May 2019 - April 2020

*Northeastern University*

- Develop swarm of unmanned aerial vehicles, which can execute predefined tasks simultaneously in outdoors, including sensing, navigation, object detection and tracking.
- Utilize different kinds of sensors, including millimeter wave radar, RGB camera, depth camera, lidar and thermal camera.
- Use convolutional neural network MobileNet to encode sensors data for multimodal representation, producing compact feature vector that forms input to drone manipulation policy learned via reinforcement learning.
- Demo video at Burlington campus: [↗](#)